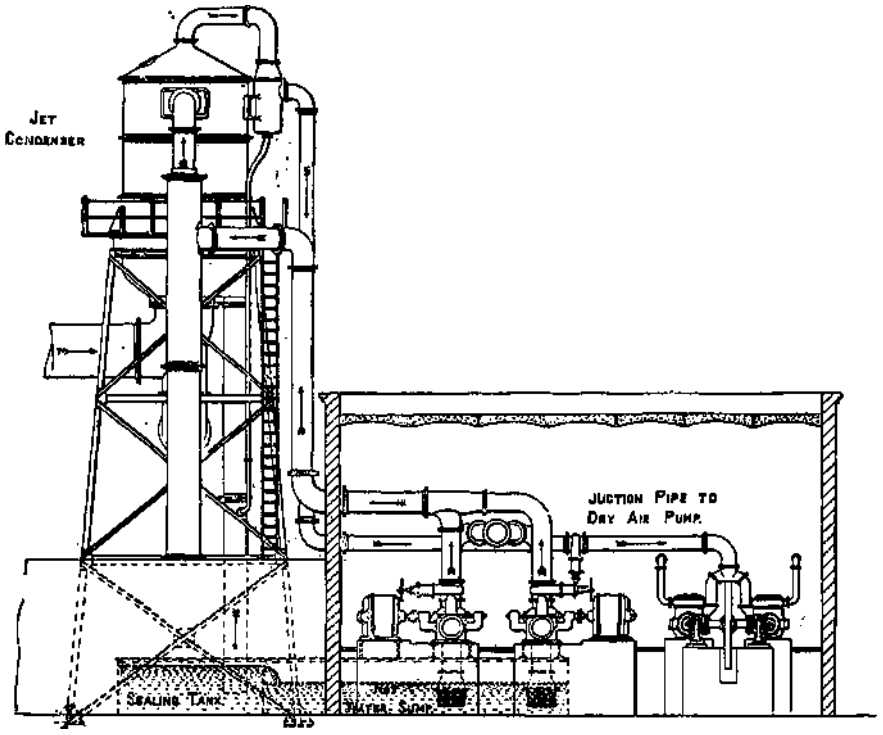
There is a certain element of risk with this type, however, in the possibility of the water-extracting pump failing to work, causing the water to flood the condenser and possibly the main engine or turbine. A vacuum breaker (see fig. i, p. 216) needs to be fitted to the condenser, arranged so that if by any reason the water rises in the condenser above a certain level a valve is opened automatically, admitting sufficient air to break the vacuum and cause the engine or turbine to exhaust to the atmosphere through a special exhaust relief valve on the exhaust main.




With the high-level, or "barometric" type of condenser as it is called, it is usually necessary to pump the injection water into the condenser, but no pump is required to extract the water, as the condenser is fixed on a staging at a barometric height, and is therefore self-draining. The arrangement of such a condenser is illustrated in fig. 3, where the condenser is shown in relation to the reciprocating dry air-

pump and the centrifugal water-pumps. One of the centrifugals

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Fig. 3.—Arrangement of Barometric Condenser

delivers the water from the condenser-drain sump to a cooling tower, and the other delivers the water from the tower tank to the condenser. The vacuum in the condenser under ordinary conditions of operation is capable of lifting this water up the injection pipe to a height equivalent to the vacuum, and the pump is therefore only called upon to lift the water through the remaining height to the condenser inlet. But if the air-pumps are not independently driven there would be little or no vacuum in the condenser until water began to be supplied, and therefore this pump should be capable of giving the full lift at the start.

The barometric condenser has to be designed for a slightly higher vacuum than the low-level type, and there is more chance of air leakage, due to the